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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
BERTHEAUD, PETER JOHN	
ART UNIT	PAPER NUMBER
3746	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/669,275	HARBUCK, E. SETH	
	Examiner	Art Unit	
	PETER J. BERTHEAUD	3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 March 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *5-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *5-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 March 2008* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/3/2008 has been entered. It should be noted that claims 5-24 are currently pending.

Drawings

2. The drawings, submitted 3/3/2008 are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 24, 28.

3. The drawings submitted 3/3/2008 are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the pipe threads located on an axial centerline of the first housing end cap must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure

is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claim 11 is objected to because of the following informalities: the phrase "wherein the first housing end cap comprises a pipe thread *is located*" should be -- wherein the first housing end cap comprises a pipe thread located--. Appropriate correction is required.

5. Claim 13 is objected to because of the following informalities: the phrase "wherein the first second housing end cap further comprises an annular offset *to located*" should be -- wherein the first second housing end cap further comprises an annular offset to locate--. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 5-24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claimed fuel pump is not enabled for the following reasons:

8. In claim 5 it is recited that the piston end cap, the machine ball, and the piston act together as an inertial check valve (see claim 5, lines 11-12). It is then stated in claim 8, lines 2-4, that “the machine ball is positioned between the piston end cap and is generally held in position against the piston end cap by the piston as the piston is biased against the piston end cap by the reset spring." This creates a problem. In the figures the piston 8 is shown to be connected to piston end cap 7, and therefore is not capable of being “biased against” the piston end cap 7 because the two supposedly “act together".

9. Furthermore, the piston end cap and piston assembly, as shown the drawings submitted 3/3/2008, will not allow any fluid to be pumped in the way described in the specification. As described in the specification, fluid enters the pump at element 45 and exits at element 25, meaning the piston 8 would have to move fluid from left to right (when looking at Figure 1). However, as seen in the enlarged portion of Figure 1, the ball is already against the piston end cap 7 before rightward movement of the piston 8 has even begun. This leaves a gap between the ball and piston 8 and therefore allows fluid to escape back to the left side of the piston 8 upon rightward movement. In addition, when the piston reaches its furthermost right position and begins to move back

left, the ball will fill the gap in the piston bore and not allow any fluid to move to the right side of the piston. In turn this will not allow any fluid to be pumped to the check valve 22 (as stated in paragraph 25 of the specification). Basically, this pump works opposite the way described in the specification.

10. In claim 8, lines 1-2, is it stated that "the piston end cap is held in place within a counter bore of the first housing end cap by an O ring." In the figures submitted 3/3/2008 the piston end cap is shown to be held to the piston without any O ring. Thus, this claimed structure is not enabled.

11. In claim 11 it is stated that the first housing end cap comprises a pipe thread located on the axial centerline; in claim 12 it is stated that the first housing end cap further comprises a threaded portion to allow for mounting of the fuel pump. Claim 12 depends from claim 11, but there is only one threaded portion on the first housing end cap shown in the drawings submitted 3/3/2008, so at the very least one of these limitations is not enabled. Furthermore, there doesn't seem to be *any* pipe threads located on an axial centerline of the first housing end cap shown in the drawings. According to the specification, the pipe threads correspond to reference numeral 24, which is not shown (see drawing objection). Because this limitation is present in claim 11 both of these claims are not enabled.

12. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

13. Claims 5-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 5 it is recited that the piston end cap, the machine ball, and the piston act together as an inertial check valve (see claim 5, lines 11-12). It is then stated in claim 8, lines 2-4, that "the machine ball is positioned between the piston end cap and is generally held in position against the piston end cap by the piston as the piston is biased against the piston end cap by the reset spring." This seems contradictory. How can the piston 8 be "biased against" the piston end cap 7 when the two supposedly act together? Furthermore, the drawings submitted 3/3/2008 show the piston end cap 7 connected to the piston 8. The piston 8 and piston end cap 7 would therefore be biased together not against one another. Appropriate correction is required.

14. In claim 8, lines 1-2, is it stated that "the piston end cap is held in place within a counter bore of the first housing end cap by an O ring." In the figures submitted 3/3/2008 the piston end cap 7 is shown to be held to the piston 8 without any O ring. The O ring 18 connects the housing end cap 2 to tube 9, but does not hold the piston end cap 7 in place, thus rendering this claim indefinite. Appropriate correction is required.

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

> invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

16. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Connor 4,047,852 in view of Skillman 6,368,084, and in further view of Hultman 4,787,823.

O'Connor discloses a fuel pump assembly comprising: a piston assembly (12, 16); a fuel filter assembly 50; and a coil assembly 62 capable of operating the piston assembly to generate a fuel pressure at a flow rate when the coil assembly 62 is operated; and wherein the piston assembly comprises a valve 27 and a piston (12, 16) acting together as an inertial check valve. O'Connor further discloses a reset spring 40 and a check valve 27. However, O'Connor does not teach the piston and housing/processor limitations taught by Skillman and Hultman, respectively.

Skillman (Fig. 3) teaches a piston assembly comprising: a piston 30, a piston end cap 63, and a machine ball 62 acting together an inertial check valve. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have modified the pump assembly of O'Connor by implementing a valved piston having an end cap and a machine ball, as taught by Skillman, because a check ball valve is an obvious variant of the poppet valve 27 shown in O'Connor.

Hultman teaches a fuel pump assembly comprising: an enclosure (24, 30, 76, 80); a pumping assembly (48, 72, 102); a coil assembly 40 capable of operating the pumping assembly assembly to generate a fuel pressure at a flow rate when the coil assembly is operated by a microprocessor sending a series of electrical impulses to the coil assembly 40 (see col. 12, lines 16-30); wherein the enclosure comprises a housing

(24, 30, 76, 80), a first housing end cap 24, and a second housing end cap 80; and wherein the pumping assembly comprises a pumping tube 72, a bobbin 48, and a valve 102 acting together as an inertial check valve. Hultman further teaches inlet 98 and outlet 104 check valves.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have modified the pump assembly of O'Connor in view of Skillman by implementing a microprocessor to control the coil assembly, as taught by Hultman, in order to eject the desired amount of fuel from the pump (see col. 12, lines 16-30).

In addition, O'Connor in view of Skillman and Hultman discloses the general conditions of the claimed invention except for the coil assembly operating the piston assembly at a frequency of between about 30 Hz and about 50 Hz to generate a fuel pressure of between about 5 psig and about 15 psig at a minimum flow rate of about 20 pounds of fuel per hour. It would have been obvious to one having ordinary skill in the art at the time the invention was made to operate the coil assembly within these parameters, since the claimed values are merely an optimum or workable range. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (*In re Aller,* 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) see MPEP 2144.05 II - Optimization of Ranges).

17. Claim 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Connor 4,047,852 in view of Skillman 6,368,084, and in further view of Hultman 4,787,823, and still in further view of Whitted 1,908,092

O'Connor in view of Skillman and Hultman discloses the invention as discussed above. However, O'Connor in view of Skillman and Hultman does not teach the specific filter limitations taught by Whitted.

Whitted teaches fuel pump assembly comprising: a filter cap 154, a filter spring 156, a filter 160, and an O ring 168, the filter having a filter end plate 158 whereby the filter is held in place by captivating the filter spring 156 between an interior of the filter cap 154 and the surface of the filter end plate 158. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have modified the pump assembly of O'Connor in view of Skillman and Hultman by implementing a filter end plate, cap, and spring, as taught by Whitted, in order to maintain the filter's position even when there is a strong fluid flow.

Conclusion

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to PETER J. BERTHEAUD whose telephone number is (571)272-3476. The examiner can normally be reached on M-F 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571) 272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/
Supervisory Patent Examiner, Art Unit 3746

PJB
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